

LIFE SCIENCES

PAPER-II
AUG-17/04

OMR Answer Sheet No. :

Roll No. :

(in figures as in Hall Ticket)

Roll Number in words :

No. of Printed Pages : 16

[Maximum Marks : 100

Time : 1½ Hours in the space provided on the top of this page.
Instructions for candidates: The question booklet will be given to you. In the first 5 minutes, you are requested to open the question booklet and examine it as below.
1. Write the compulsory questions in the question booklet. Do not accept a booklet without sticker seal and do not accept an open booklet.
2. Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to missing pages or duplicate or not in serial order or any other discrepancy should be got replaced immediately. A correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.
(iii) After this verification is over, the Test Booklet Number should be entered on the OMR Answer Sheet and the OMR Answer Sheet Number should be entered on this Test Booklet.

4. Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.
Example : (A) (B) (C) (D) where (B) is the correct response.
Your responses to the items are to be indicated on the OMR Answer Sheet under Paper - II only. If you mark your response at any place other than in the oval in the OMR Answer Sheet, it will not be evaluated.

6. Read instructions given inside carefully.
7. Rough Work is to be done in the end of this booklet.
8. If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.
9. You have to return the original OMR Answer Sheet to the invigilator at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet and duplicate copy of OMR Answer Sheet on conclusion of examination.
10. Use only Blue/Black Ball point pen.
11. Use of any calculator or log table etc., is prohibited.
12. There shall be no negative marking.
13. In case of any discrepancy in the English and Gujarati versions of questions, English version will be taken as final.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

1. આ પાનાની ટોચ પર દર્શાવેલી જગ્યામાં તમારો રોલ નંબર લખો.
2. આ પ્રશ્નપત્રમાં બહુલેક્ષિક ઉત્તરો ધરાવતા પચાસ (૫૦) પ્રશ્નો આપેલા છે. બધાજ પ્રશ્નો ફરજિયાત છે.
3. પરીક્ષાની શરૂઆતમાં આપને પ્રશ્નપુસ્તિકા આપવામાં આવશે. પ્રથમ પાંચ (૫) મિનિટ દરમિયાન તમારે પ્રશ્નપુસ્તિકા ખોલી અને ફરજિયાતપણે નીચે મુજબ પરીક્ષા કરવું:
(i) પ્રશ્નપુસ્તિકાનો વપરાશ કરવા માટે આ કવર પૂઠની ધાર પર આપેલ સીલ સ્ટીકર ફાડી નાખો. કોઈપણ સંજોગોમાં સીલ સ્ટીકર વગર ની કે ખુલ્લી પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં.
(ii) કવર પૂઠ પર છપાયેલ નિર્દેશાનુસાર પ્રશ્નપુસ્તિકાના પ્રશ્નો, પૂઠો અને સંખ્યાને બરાબર ચકાસી લો. ખામીયુક્ત પ્રશ્નપુસ્તિકા કે જેમાં પ્રશ્નો/પૂઠો ઓછા હોય, બે વાર છપાયા હોય, અનુક્રમમાં અથવા અન્ય કોઈ ફરક હોય અર્થાત કોઈપણ સંજોગોમાં ખામીયુક્ત પ્રશ્નપુસ્તિકા સ્વીકારશો નહીં. અને જો ખામીયુક્ત પ્રશ્નપુસ્તિકા મળી હોય તો નિરીક્ષક પાસેથી તુરંત જ બીજી સારી પ્રશ્નપુસ્તિકા મેળવી લેવી. આ માટે ઉમેદવારને પાંચ (૫) મિનિટનો સમયગાળો આપવામાં આવશે. પછી થી, પ્રશ્નપુસ્તિકા બદલવામાં આવશે નહીં કે કોઈ વધારાનો સમયગાળો આપવામાં આવશે નહીં.
(iii) આ ચકાસણી સમાપ્ત થાય પછી, પ્રશ્નપુસ્તિકાનો નંબર OMR જવાબ પત્રક પર લખવો અને OMR જવાબ પત્રકનો નંબર પ્રશ્નપુસ્તિકા પર લખવો.
4. પ્રત્યેક પ્રશ્ન માટે ચાર જવાબ વિકલ્પ (A), (B), (C) અને (D) આપવામાં આવેલ છે. તમારે સાચા જવાબના ઓવલ (oval) ને નીચે આપેલ ઉદાહરણ મુજબ પેનથી ભરીને સંપૂર્ણ કાળું કરવાનું રહેશે.
ઉદાહરણ : (A) (B) (C) (D) કે જ્યાં (B) સાચો જવાબ છે.
5. આ પ્રશ્નપુસ્તિકાના પ્રશ્નો ના જવાબ અલગથી આપવામાં આવેલ OMR જવાબ પત્રકમાં પેપર-II લખેલ વિભાગમાં જ અંકિત કરવા. જો આપ OMR જવાબ પત્રકમાં આપેલ ઓવલ (oval) સિવાય અન્ય સ્થાને જવાબ અંકિત કરશો તો તે જવાબનું મૂલ્યાંકન કરવામાં આવશે નહીં.
6. અંદર આપેલ સૂચનાઓ ધ્યાનપૂર્વક વાંચો.
7. કાળું કામ (Rough Work) પ્રશ્નપુસ્તિકાના અંતિમ પૂઠ પર કરવું.
8. જો આપ OMR જવાબ પત્રક નિયત જગ્યા સિવાય અન્ય કોઈપણ સ્થાને, આપનું નામ, રોલ નંબર, ફોન નંબર અથવા એવું કોઈ ચિન્હ કે જેનાથી તમારી ઓળખ થઈ શકે, અંકિત કરશો અથવા અલગ ભાષાનો પ્રયોગ કરો, અથવા અન્ય કોઈ અનુચિત સાધનોનો ઉપયોગ કરો, જેમ કે અંકિત કરી દીધેલ જવાબ ભૂંસી નાખવો કે સફેદ શાહીનો ઉપયોગ કરી બદલશો તો આપને પરીક્ષા માટે અધોગ્ય જાહેર થઈ શકો છો.
9. પરીક્ષા સમય પૂરો થઈ ગયા બાદ ઓરીજનલ OMR જવાબ પત્રક જે તે નિરીક્ષકને ફરજિયાત સોંપી દેવું અને કોઈ પણ સંજોગોમાં તે પરીક્ષાપંડની બહાર લઈ જવું નહીં. પરીક્ષા પૂર્ણ થયા બાદ ઉમેદવાર ઓરીજનલ પ્રશ્નપુસ્તિકા અને OMR જવાબ પત્રકની કુપિલકેટ કોપી પોતાની સાથે લઈ જઈ શકે છે.
10. માત્ર કાળી/ભૂરી બોલ પોઈન્ટ પેન વાપરવી.
11. કેલક્યુલેટર અને અન્ય ઈલેક્ટ્રોનિક યંત્રોનો ઉપયોગ કરવાની મનાઈ છે.
12. ખોટા જવાબ માટે નકારાત્મક મૂલ્યાંકન પ્રથા નથી.
13. પ્રશ્નપુસ્તિકાના કોઈ પ્રશ્નમાં અનુવાદ અંગે કોઈ વિવાદ/મતભેદ જણાય તો અંગ્રેજી વર્જન યોગ્ય ગણાશે.

SEAL



LIFE SCIENCES

PAPER - II

Note : This paper contains **FIFTY (50)** multiple-choice/assertion/reasoning questions/matching questions. Each question carries **TWO (2)** marks. Attempt **All** the questions.

1. In bacterial protein synthesis the initiating amino acid is :
(A) N-formyl methionine (B) Methionine
(C) Glutamic acid (D) Casein
2. The Lineweaver-Burk plot is used to graphically determine K_m and V_{max} of enzymes that obey classic Michealis-Menten kinetics.

When V is the reaction velocity at substrated concentration S , the Y axis experimental data in the Lineweaver-Burk plot are expressed as :

- (A) V (B) S
(C) $1/V$ (D) $1/S$
3. The solution of acetic buffer with pH 4.00 is how many times stronger than the same buffer with pH 6.
(A) 2 (B) 100
(C) 1000 (D) 10

4. Peroxisomes are surrounded by :
- (A) Double membrane
 - (B) Cell wall
 - (C) Single membrane
 - (D) Both cell wall and membrane
5. The operator gene of Lac-operon is 'turned on' when lactose molecule binds to :
- (A) Operator gene
 - (B) Repressor gene
 - (C) Promoter gene
 - (D) *m*-RNA
6. The membrane enclosing the main vacuole by the cell is called as :
- (A) Tonoplast
 - (B) Amyloplast
 - (C) Chloroplast
 - (D) Elaioplast
7. Which of the following has no DNA ?
- (A) Nucleoplasm
 - (B) Chloroplast
 - (C) Mitochondria
 - (D) Golgi apparatus

8. The operon system contains :
- (A) A linear sequence of genes
 - (B) A linear sequence of genes and adjacent DNA sequences
 - (C) Only promotor
 - (D) Only operator
9. Disulphide bonds which act in the atomic staples to reinforce the conformation of proteins are formed in :
- (A) Cytosol
 - (B) Endoplasmic reticulum
 - (C) Lysosome
 - (D) Golgi apparatus
10. The terms cistron, muton and recon were coined by :
- (A) Jenues
 - (B) Carlson
 - (C) Benzer
 - (D) Bateson
11. What is common point of similarity between DNA and RNA ?
- (A) both are double standard
 - (B) both have identical sugar molecules
 - (C) both are polymers of nucleotides
 - (D) both have identical pyrimidine bases

12. Genes concerned with the production of cancer is called :
- (A) Carcinogen (B) Cancer gene
(C) Oncogene (D) Carcinoma
13. Which of the subclasses of antibodies are found in blood serum and secretions ?
- (A) IgG1, IgG4 (B) IgG2, IgG3
(C) IgA1, IgA2 (D) IgG1, IgG3
14. Interferons :
- (A) activate β -cells to make virus specific antibodies
(B) inhibit virus replication by infected cells
(C) are Th_2 cytokines
(D) are virus proteins that interfere with activation of cytotoxic T-cells
15. Most antibodies are synthesized by the :
- (A) Central lymphoid organs
(B) Primary lymphoid organs
(C) Macropages
(D) Peripheral lymphoid organs

16. The embryonic stage in the frog in which differentiation of mesoderm takes place, is called as :

(A) Blastula

(B) Gastrula

(C) Morula

(D) Nerula

17. The chief component of exine of a mature pollen grain is :

(A) Cellulose

(B) Lipid

(C) Suberin

(D) Sporopollenin

18. A mesolecithal egg undergoes holoblastic cleavage, is represented in :

(A) Birds

(B) Amphioxus

(C) Amphibians

(D) Echinoderms

19. Temperature dependent sex determination (TSD) is frequently observed in one of the following chordates :

(A) Cephalochordates

(B) Fishes

(C) Crocodilians

(D) Birds

20. Which one of the plant hormone is known as stress hormone ?
- (A) Gibberellins (B) Kinetins
(C) Auxin (D) Abscisic acid
21. Function of water in the photosynthesis is to :
- (A) transport H^+ ions in the light independent reactions
(B) Supply electrons in the light dependent reactions
(C) Absorb light energy
(D) Provide O_2 for light independent reactions
22. Which one of the following is *wrongly* paired :
- (A) Manganese — Structural component of chlorophyll
(B) Iron — Component of ferredoxin
(C) Zinc — Enzyme activator
(D) Calcium — Component of middle lamellae
23. The water in the xylem vessels moves towards the top of a tree as a result of :
- (A) atmospheric pressure of roots
(B) active transport of ions into the vascular bundles
(C) evaporation of water through stomata
(D) the force of root pressure

24. The digestion of fat in chordates is facilitated by the presence of :
- (A) Iodine (B) Glucose
(C) Bile salts (D) Ptyline
25. The sinus venosus in mammalian heart is fused with :
- (A) Left atrium (B) Left ventricle
(C) Right atrium (D) Right ventricle
26. The Goitre is linked to :
- (A) Pituitary gland (B) Thyroid gland
(C) Adrenal gland (D) Pancreas
27. One of the following animals possesses 'nerve net' for coordination :
- (A) Sycon (B) Jelly fish
(C) Earthworm (D) Prawn
28. Bacterial process in which genetic material is carried by some external agency is called :
- (A) Translation (B) Transformation
(C) Transduction (D) Conjugation

29. Cytoplasmic inheritance through Kappa particles is observed in :
- (A) *Amoeba* (B) *Paramecium*
(C) *Sycon* (D) Earthworm
30. In *Drosophila melanogaster*, sex is determined by :
- (A) X and Y chromosomes
(B) X/A ratio
(C) Ploidy
(D) Z and W chromosomes
31. The genetic defect Thalassaemia results from partial or total absence of one or more :
- (A) Only α -chain of haemoglobin
(B) Only β -chain of haemoglobin
(C) α and β -chains of haemoglobin
(D) γ and β -chains of haemoglobin
32. Plant viruses mostly are named from :
- (A) The disease morphology, they produce
(B) Their protein coat
(C) Nature of DNA
(D) Habitat

33. A species facing an extremely high risk of extinction in the immediate future is called :

- (A) Endemic (B) Endangered
(C) Threatened (D) Vulnerable

34. Which one of the following is mismatched ?

- (A) Apical meristem — root apex
(B) Intercalary meristem — internode
(C) Lateral meristem — Cork cambium
(D) Dead mechanical tissue — Sclerenchyma

35. Which one of the following statements is *not* correct ?

- (A) In bryophytes, gametophyte is freeliving and dominant
(B) In pteridophytes the gametophyte is free living and remain for a short period
(C) In Gymnosperms, generally the antheridium is absent.
(D) Gymnosperms are homosporous

36. The phylogenetic system of classification of plants refers to their grouping based on the :
- (A) Morphological characters
 - (B) Increasing complexities
 - (C) Evolutionary affinities
 - (D) Floral similarities
37. Diatoms do not readily decay like most other algae because they have :
- (A) Outer lining of non-living cells
 - (B) Cell walls made of silica
 - (C) Cell walls made of chitin
 - (D) Mucilaginous cell walls
38. Ramsar Convention on wetlands was adopted in :
- (A) 1987
 - (B) 1981
 - (C) 1971
 - (D) 1961
39. When a forest is destroyed by fire and again occupied by herbs in the initial stage, is an example of :
- (A) Primary succession
 - (B) Secondary succession
 - (C) Autogenic succession
 - (D) Climax stage

40. Quantities of mineral nutrients in the soil of tropical rain forests are relatively low because :
- (A) Leaf fall occurs at a slow rate
 - (B) diversity of microorganisms is very low
 - (C) nutrient cycling occurs comparatively at slow rate
 - (D) decomposition of organic matter and re-assimilation of chemicals by plants occurs rapidly
41. Halophytes such as mangroves meet high osmotic pressure in the soil. They overcome the problem of water uptake by :
- (A) Accumulation of electrolytes in the vacuoles
 - (B) Increase in the root to shoot ratio
 - (C) grow at relatively high humidity to reduce transpiration
 - (D) reduction in the number of stomata to reduce transpiration
42. The population genetics shows how genetic variation is retained in Mendelian inheritance. It was proposed by :
- (A) Hardy Weinberg
 - (B) Darwin
 - (C) Wallace
 - (D) Mendel

43. The catalogue of behaviour of animals is called as :

(A) Myogram

(B) Echogram

(C) Ethogram

(D) Cardiogram

44. Which one of the following determines the branching pattern of evolution :

(A) Phylogenetics

(B) Phenetics

(C) Polymorphism

(D) Cladistics

45. Geologically one of the following eras is known as "Age of Mammals" ?

(A) Phenerozoic

(B) Palaeozoic

(C) Cenozoic

(D) Mesozoic

46. Somaclonal variations in crops can be generated with the help of :

(A) Tissue culture

(B) R-DNA technology

(C) Chemical mutagens

(D) Gamma-rays

47. Bt gene coding Bt toxins derived from *Bacillus thuringiensis* is used for plants to protect from :
- (A) Nematodes (B) Annelids
(C) Molluscs (D) Insects
48. Which one of the following is a potential petro-crop ?
- (A) *Litsea polyantha* (B) *Magnolia spherocarpa*
(C) *Symplocos grandiflora* (D) *Jatropha curcas*
49. Triticale, the hybrid wheat is :
- (A) Tetraploid (B) Allotetraploid
(C) Autotetraploid (D) Diploid
50. Rapid analysis of thousands of genes can be done by :
- (A) DNA microarray
(B) PCR
(C) Northern Blotting
(D) Western Blotting

ROUGH WORK

SEAL